



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Studies on the Evolution of Primates. Part I. The Cope-Osborn "Theory of Trituberculy" and the ancestral molar patterns of the primates. Part II. Phylogeny of recent and extinct anthropoids with special reference to the origin of man. WILLIAM K. GREGORY. Bulletin of the American Museum of Natural History, Vol. xxxv, Art. XIX, 1916. Pp. 239-355.

About a century ago the great C. G. Cuvier demonstrated before an assemblage of scientists that the systematic position of a fossil can be determined from the structural peculiarities of the teeth. Before their eyes he laid bare the skeleton embedded in a gypsum rock of an animal which, from a single tooth, he had recognized as a marsupial. Proving thus his "law of correlation," it was he who first conceived the idea of a comparative treatment of paleolithic vertebrate zoology, supporting it by his profound knowledge and the courage of his convictions. It is the teeth that in consideration of their high diagnostic value have since formed a favorite object of investigation. Dr. Gregory's present treatise is based on such evidence, but not exclusively so. His observations on general structural peculiarities and adaptive changes of the groups examined demonstrate an exceptional competency and knowledge as well as an intuitive ability to view biological conditions from the evolutionary and selective points of view. Approaching his publication from these grounds we find accumulated a vast amount of deductive argument as to the morphological side of his theme. As they represent to a large extent the author's own observations their scientific value is of still greater significance.

Part I contains a critique of the Cope-Osborn "Theory of Trituberculy" and its adaptation to the molar patterns of primates. With "Trituberculy" as the original pattern of all mammal teeth fairly universally adopted, the better comprehension of evolutionary facts suggested a nomenclature for the cusps of molars which would be entirely adequate and far more so than a purely descriptive one. Such a nomenclature was introduced by H. F. Osborn as early as 1895. Different speculations on and modifications of the theory of trituberculy have been widely discussed and are still being debated. An acceptable explanation of growing complexity of teeth in the upper antero-posterior line is offered in the so-called "Premolar-Analogy" theory, which holds that in placental mammals the paracone (upper outward cusps forward) is usually homologous with the originally haplodont (single cusps) crown of the reptilian teeth. Plate I shows the application of this theory on a number of tooth rows, tracing and identifying the derivation of cusps by means of guiding lines.

In Part II all the recent and extinct anthropoids are reviewed and phyletically traced up to the *Hominidae*, as described in the works of Schlosser, Strömer, Abel, Pilgrim *et al.* on European, Egyptian, and Indian fossils, and in many other well-known and exhaustive treatises. The classification of the order of Primates proposed by the author is another example of a careful survey of the entire field. It seems to be perfectly intelligible to range the *Adapidae* with the Lemuriforms since a close examination has justified this classification. The same holds true for the Tarsiiforms, even if one or another morphological detail should point towards remote anthropoidal relationship. It is natural that importance should be attached to these questions when it comes to revealing generic coherence of forms in the phyletic sense. *Parapithecus*, then, of the Lower Oligocene of Egypt—not of Europe as the printer would prefer on p. 336—is in the author's opinion the earliest known member of the anthropoid series. The fundamental pattern of its pre-molars and molars foreshadows the true anthropoid, while in *Propliopthecus* of the same locality the specialization has increased towards the higher form. From here in the lower Oligocene the road divides, one leading over *Pliopithecus* to *Hylobates*, the other towards *Simiinae*, the latter producing the apes and *Hominidae*. The evidence extant does not suggest an earlier separation of the *Hominidae* from the *Simiidae* than in the Miocene period. Granted the existence of a common ancestor for anthropoids and man, there are among the numerous problems two that face the conscientious observer: one is the recognition of the ancestor's unspecialized form. Comparison teaches us the decided specialization of the higher apes to such an extent as to render retrospection very difficult if it were not that, with some reservations, embryological facts show a certain degree of uniformity. From this it would appear that man has in some important morphological peculiarities, especially in the skull and limbs, diverged the least. And here the second problem turns up in the lack of transitional forms in the human line, as the well-known fossils including the Piltdown skull seem to represent forms already specialized.

They leave no doubt that from a morphological point of view underlying each and every phyletic proposition that man's nearest kin are the anthropoids and that the separation from the anthropoid stem took place not in the "pre-lemuroid or even pre-catarrhine stage," but after the separation of the gibbon, which Keith goes so far as to attach to the cynomorphous group. The dentition indicates an evolution of the *Hominidae* over the frugivorous and omnivorous stages to that of

modern adaptation, where the teeth acquire retrograde characters on account of foodstuffs being prepared so as to require minimum effort. Such changes are closely correlated with those of modes of life, the two contrasting poles of which are the arboreal and the domesticated forms, also conditioning very decided changes in skeletal adaptation. The retraction of the face and the loss of the prehensile character of the hallux are the most significant ones.

Dr. Gregory's book is a distinguished example of the approach of phyletic problems by minute and comparative description, supported by explanatory illustrations. He consciously does away with methods of more exact representation by means of diagrammatic and mathematical devices. That such a solution is possible to a fair degree in a field of investigation dealing mostly with transitory fossil forms in view of a, for the time being, fixed biological final form, as represented by man in the phyletic sense, is fully shown in the author's work. It is in fact the most conscientious, resourceful and up-to-date comprehensive work, containing a wealth of acute morphological observations and clever deductive argumentation, that has come to my knowledge for some time. A few disdainful remarks on sciences that have to rely to some degree on exact methods, preeminently anthropology itself (pp. 250, 333, 341) cannot detract from the distinct value of his exposition. They only serve to show, besides forming an unnecessary diversion, a fatal misconception of the object and view of anthropology, whose chief task consists in analyzing a living form, as it were, even if it refers to historically extinct races. That this has to be accomplished with a consideration of all the biological perspectives that pertain to man's physical existence goes without saying. Paleozoological endeavors must naturally cease on the threshold of this science with its complexity of phenomena, but their excellent work in tracing the phyletic connections of man's ancestors should be appreciated without reservation, especially in the work here reviewed.

BRUNO OETTEKING

MISCELLANEOUS

The Turquois. A Study of its History, Mineralogy, Geology, Ethnology, Archeology, Mythology, Folklore, and Technology. JOSEPH E. POGUE. (Memoirs of the National Academy of Sciences, Vol. XII, Part II, third memoir, Washington, 1915), 162 pp, 22 plates, one of which is colored, and 1 frontispiece in colors. 30×24 cm.

This splendid publication, the fruit of many years of assiduous and